

**ABSTRACT OF THE DISCLOSURE**

The invention provides a probe and a method of making the probe that is removably insertable into a gas phase ion spectrometer, the probe comprising a substrate having a surface and a hydrogel material on the surface, the hydrogel material comprising binding

5 functionalities for binding with an analyte detectable by the gas phase ion spectrometer.

The invention also provides a probe and a method of making the probe that is removably insertable into a gas phase ion spectrometer, the probe comprising a substrate having a surface and a plurality of particles that are uniform in diameter on the surface, the particles comprising binding functionalities for binding with an analyte detectable by the

10 gas phase ion spectrometer. Further, the invention provides a system comprising the probe of the present invention and a gas phase ion spectrometer comprising an energy source that directs light to the probe surface to desorb an analyte and a detector in communication with the probe surface that detects the desorbed analyte. The invention also provides a method for desorbing an analyte from a probe surface, the method

15 comprising exposing the binding functionalities to a sample containing an analyte under conditions to allow binding between the analyte and the binding functionalities, and desorbing the analyte from the probe by gas phase ion spectrometry.